

WHAT IS CLAIMED IS:

1. An information medium which can record together multi-standard data managed in units of files by file management information,

5 wherein integrated management information that integrates and manages mixed reproduction of the multi-standard data can be recorded.

2. A medium according to claim 1, wherein the integrated management information is a file managed by the file management information.

3. An information medium which has a recording area that can record a plurality of kinds of data coded based on any of no less than two different standards, the recording area including:

15 a first management information recording area which can record first management information that manages first data coded based on a first standard of the no less than two different standards;

20 a second management information recording area which can record second management information that manages second data coded based on a second standard of the no less than two different standards; and

25 an integrated management information recording area which can record integrated management information that manages the first management information and second management information together.

4. A medium according to claim 3, further

including an area for storing hierarchical file structure information of data files including an integrated management information file that stores the integrated management information, a first management information file that stores the first management information, and a second management information file that stores the second management information.

5. An information medium which has a recording area that can record a plurality of kinds of data coded based on any of no less than three different standards, the recording area including:

a first management information recording area which can record first management information that manages first data coded based on a first standard of the no less than three different standards;

a second management information recording area which can record second management information that manages second data coded based on a second standard of the no less than three different standards;

a third management information recording area which can record third management information that manages third data coded based on a third standard of the no less than three different standards; and

an integrated management information recording area which can record integrated management information that manages the first management information, second management information, and third management

information together,

the first data being able to contain video contents,

the second data being able to contain audio contents, and

the third data being able to contain arbitrary contents.

6. A medium according to claim 5, further including an area for storing hierarchical file structure information of data files including an integrated management information file that stores the integrated management information, a first management information file that stores the first management information, a second management information file that stores the second management information, and a third management information file that stores the third management information.

7. A data processing method for reproducing recorded data from an information medium on which multi-standard data managed in units of files by file management information are recorded together, comprising:

reading out the file management information from the information medium;

extracting directory information of data files recorded in the information medium from the readout file management information, and storing the directory

information;

checking a file type in specific directory  
information from the stored directory information; and

outputting, if it is determined as a result of  
5 checking that no less than two different multi-standard  
data files are present, information indicating that the  
multi-standard data are recorded together on the  
information medium.

8. A method according to claim 7, wherein if it  
10 is determined as a result of checking that no less than  
two different multi-standard data files are present,  
information indicating a mixed combination state of the  
multi-standard data recorded together on the  
information medium is output.

15 9. An integrated management information forming  
method for integrating and managing a reproduction  
sequence of information reproduced from an information  
medium on which no less than two kinds of  
multi-standard contents information managed in units of  
20 files by file management information, and contents  
management information thereof are recorded together,  
comprising:

reading out and storing the contents management  
information from the information medium;

25 acquiring contents management information of each  
multi-standard contents information from the stored  
contents management information;

selectively acquiring reproduction unit  
information indicating an arbitrary reproduction period  
of each multi-standard contents information from the  
acquired contents management information; and

5           forming integrated management information that  
integrates and manages mixed reproduction of the  
multi-standard contents information by combining and  
registering the selectively acquired reproduction unit  
information of the multi-standard contents information  
10          in an arbitrary reproduction order.

10.   An integrated management information saving  
method for integrating and managing a reproduction  
sequence of information reproduced from an information  
medium on which no less than two kinds of  
15       multi-standard contents information managed in units of  
files by file management information, and contents  
management information thereof are recorded together,  
comprising:

20           reading out and storing the contents management  
information from the information medium;

          acquiring contents management information of each  
multi-standard contents information from the stored  
contents management information;

25           selectively acquiring reproduction unit  
information indicating an arbitrary reproduction period  
of each multi-standard contents information from the  
acquired contents management information;

forming integrated management information that integrates and manages mixed reproduction of the multi-standard contents information by combining and registering the selectively acquired reproduction unit information of the multi-standard contents information in an arbitrary reproduction order; and

saving the formed integrated management information in a predetermined information storage unit.

11. An information access method, which uses integrated management information, and integrates and manages a reproduction sequence of information reproduced from an information medium on which no less than two kinds of multi-standard contents information managed in units of files by file management information, and contents management information thereof are recorded together, comprising:

reading out and storing the contents management information from the information medium;

acquiring contents management information of each multi-standard contents information from the stored contents management information;

selectively acquiring reproduction unit information indicating an arbitrary reproduction period of each multi-standard contents information from the acquired contents management information;

forming integrated management information that integrates and manages mixed reproduction of

the multi-standard contents information by combining  
and registering the selectively acquired reproduction  
unit information of the multi-standard contents  
information in an arbitrary reproduction order; and

5           accessing each multi-standard contents information  
in accordance with the reproduction order registered in  
the integrated management information.

12. An integrated management information recording  
method for recording information on an information  
10           medium on which no less than two kinds of  
multi-standard contents information managed in units of  
files by file management information, and contents  
management information thereof are recorded together,  
comprising:

15           reading out and storing the contents management  
information from the information medium;

            acquiring contents management information of each  
multi-standard contents information from the stored  
contents management information;

20           selectively acquiring reproduction unit  
information indicating an arbitrary reproduction period  
of each multi-standard contents information from the  
acquired contents management information;

            forming integrated management information that  
25           integrates and manages mixed reproduction of the  
multi-standard contents information by combining and  
registering the selectively acquired reproduction unit

information of the multi-standard contents information  
in an arbitrary reproduction order; and

recording the formed integrated management  
information on the information medium.

5           13. A method according to claim 12, wherein the  
integrated management information is recorded as a file  
managed by the file management information.

10           14. A reproduction method for reproducing  
mixed-recorded contents information from an information  
medium on which no less than two kinds of  
multi-standard contents information managed in units of  
files by file management information, and contents  
management information thereof are recorded together,  
and integrated management information that integrates  
15           and manages a reproduction sequence of these pieces of  
mixed-recorded contents information is recorded as  
a file, comprising:

acquiring the integrated management information  
from the information medium;

20           reading out reproduction unit information of  
a standard to be accessed by extracting reproduction  
unit information indicating an arbitrary reproduction  
period of each multi-standard contents information in  
turn from the acquired integrated management  
25           information; and

reading out the contents information corresponding  
to the standard to be accessed from the information



medium in accordance with the readout reproduction unit information of the standard to be accessed.

5        15. A method according to claim 14, wherein when the readout reproduction unit information of the standard to be accessed is reproduction unit information of a reproduction incompatible standard, an access process to contents information corresponding to the reproduction unit information of the reproduction incompatible standard is skipped.

10        16. A reproduction apparatus for reproducing recorded data from an information medium on which multi-standard data managed in units of files by file management information are recorded together, comprising:

15            a read-out section configured to read out the file management information from the information medium;

          a storage section configured to extract directory information of data files recorded in the information medium from the file management information read out by  
20        said read-out section, and storing the directory information;

          a checking section configured to check a file type in specific directory information from the directory information stored in said storage section; and

25            output section configured to, if it is determined as a result of checking of said checking section that no less than two different multi-standard data files

are present, output information indicating that the multi-standard data are recorded together on the information medium.

17. An apparatus according to claim 16, wherein if it is determined as a result of checking of said checking section that no less than two different multi-standard data files are present, said output section displays information indicating a mixed combination state of the multi-standard data recorded together on the information medium.

18. An information forming apparatus for integrating and managing a reproduction sequence of information reproduced from an information medium on which no less than two kinds of multi-standard contents information managed in units of files by file management information, and contents management information thereof are recorded together, comprising:

a read-out/storage section configured to read out and storing the contents management information from the information medium;

an acquisition section configured to acquire contents management information of each multi-standard contents information from the contents management information stored in said read-out/storage section;

a selective acquisition section configured to selectively acquire reproduction unit information indicating an arbitrary reproduction period of each

multi-standard contents information from the contents management information acquired by said acquisition section; and

5 a forming section configured to form integrated management information that integrates and manages mixed reproduction of the multi-standard contents information by combining and registering the reproduction unit information of the multi-standard contents information selectively acquired by said selective acquisition section in an arbitrary reproduction order.

10 19. An information saving apparatus for integrating and managing a reproduction sequence of information reproduced from an information medium on which no less than two kinds of multi-standard contents information managed in units of files by file management information, and contents management information thereof are recorded together, comprising:

15 a read-out/storage section configured to read out and storing the contents management information from the information medium;

20 an acquisition section configured to acquire contents management information of each multi-standard contents information from the contents management information stored in said read-out/storage section;

25 a selective acquisition section configured to selectively acquire reproduction unit information

indicating an arbitrary reproduction period of each multi-standard contents information from the contents management information acquired by said acquisition section;

5           a forming section configured to form integrated management information that integrates and manages mixed reproduction of the multi-standard contents information by combining and registering the reproduction unit information of the multi-standard  
10 contents information selectively acquired by said selective acquisition section in an arbitrary reproduction order; and

          a saving section configured to save the formed integrated management information in a predetermined  
15 information storage unit.

20. An information access apparatus, which uses integrated management information, and integrates and manages a reproduction sequence of information reproduced from an information medium on which no less  
20 than two kinds of multi-standard contents information managed in units of files by file management information, and contents management information thereof are recorded together, comprising:

          a read-out/storage section configured to read out  
25 and storing the contents management information from the information medium;

          an acquisition section configured to acquire

contents management information of each multi-standard  
contents information from the contents management  
information stored in said read-out/storage section;

5 a selective acquisition section configured to  
selectively acquire reproduction unit information  
indicating an arbitrary reproduction period of each  
multi-standard contents information from the contents  
management information acquired by said acquisition  
section;

10 a forming section configured to form integrated  
management information that integrates and manages  
mixed reproduction of the multi-standard contents  
information by combining and registering the  
reproduction unit information of the multi-standard  
15 contents information selectively acquired by said  
selective acquisition section in an arbitrary  
reproduction order; and

an access section configured to access each  
multi-standard contents information in accordance with  
20 the reproduction order registered in the integrated  
management information formed by said forming section.

21. An information recording apparatus for  
recording information on an information medium on which  
no less than two kinds of multi-standard contents  
25 information managed in units of files by file  
management information, and contents management  
information thereof are recorded together, comprising:

a read-out section configured to read out and storing the contents management information from the information medium;

5 an acquisition section configured to acquire contents management information of each multi-standard contents information from the contents management information read out by said read-out section;

10 a selective acquisition section configured to selectively acquire reproduction unit information indicating an arbitrary reproduction period of each multi-standard contents information from the contents management information acquired by said acquisition section;

15 a forming section configured to form integrated management information that integrates and manages mixed reproduction of the multi-standard contents information by combining and registering the reproduction unit information of the multi-standard contents information selectively acquired by said selective acquisition section in an arbitrary reproduction order; and

a recording section configured to record the integrated management information formed by said forming section on the information medium.

25 22. An apparatus according to claim 21, wherein the integrated management information is recorded as a file managed by the file management information.

23. A reproduction apparatus for reproducing mixed-recorded contents information from an information medium on which no less than two kinds of multi-standard contents information managed in units of files by file management information, and contents management information thereof are recorded together, and integrated management information that integrates and manages a reproduction sequence of these pieces of mixed-recorded contents information is recorded as a file, comprising:

an acquisition section configured to acquire the integrated management information from the information medium;

a reproduction unit information read-out section configured to read out reproduction unit information of a standard to be accessed by extracting reproduction unit information indicating an arbitrary reproduction period of each multi-standard contents information in turn from the integrated management information acquired by said acquisition section; and

a contents information read-out section configured to read out the contents information corresponding to the standard to be accessed from the information medium in accordance with the reproduction unit information of the standard to be accessed read out by said reproduction unit information read-out section.

24. An apparatus according to claim 23, further

comprising a section configured to, when the readout reproduction unit information of the standard to be accessed is reproduction unit information of a reproduction incompatible standard, skip an access  
5 process to contents information corresponding to the reproduction unit information of the reproduction incompatible standard.

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